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EXHIBIT

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delimit *vb.* To set the limits of some entity, generally by using a special symbol called a delimiter. Programming languages typically delimit such variable-length elements as comments, strings, and program blocks. *See also* delimiter.

delimiter *n.* A special character that sets off, or separates, individual items in a program or set of data. Special characters often used include commas, semi-colons, tabs, and paragraph marks. *See also* delimit, field (definition 1), record¹.

Del key *n.* *See* Delete key.

delta channel *n.* *See* ISDN.

demand-driven processing *n.* The processing of data immediately as it becomes available or ready. Such real-time processing avoids the need to store data that has not been processed. *Compare* data-driven processing.

demand paging *n.* The most common implementation of virtual memory, in which pages of data are read into main memory from an auxiliary storage device only in response to interrupts that result when software requests a memory location that the system has saved to auxiliary storage and reused for other purposes. *See also* paging, swap (definition 2), virtual memory.

demand priority *n.* A network access method in which hubs control network access; a feature of 100Base-VG Ethernet networks. With demand priority, nodes send requests to hubs and the hubs give permission to transmit based on priority levels assigned to the requests by the nodes. *See also* 100Base-VG.

demand publishing *n.* Producing print copies of publications on an as-needed basis rather than in a single long press run. Demand publishing is a by-product of desktop publishing and advancements in printer capabilities.

demo *n.* 1. Short for **demonstration**. A partial or limited version of a software package distributed free of charge for advertising purposes. Demos often consist of animated presentations that describe or demonstrate the program's features. *See also* crippled version. 2. A computer in a store that is available for customers to test, to see if they wish to buy it.

demodulation *n.* In communications, the means by which a modem converts data from modulated carrier frequencies (waves that have been modified in such a way that variations in amplitude and frequency represent meaningful information) over a telephone line. Data is converted to the digital form needed by a computer to

which the modem is attached, with as little distortion as possible. *Compare* modulation (definition 1).

demon dialer *n.* *See* war dialer.

demonstration program or **demo program** *n.* 1. A prototype that shows the on-screen look and sometimes the proposed capabilities of a program under development. *See also* prototyping. 2. A scaled-down version of a proprietary program offered as a marketing tool.

denial of service attack *n.* *See* Dos.

denizen *n.* A participant in a Usenet newsgroup.

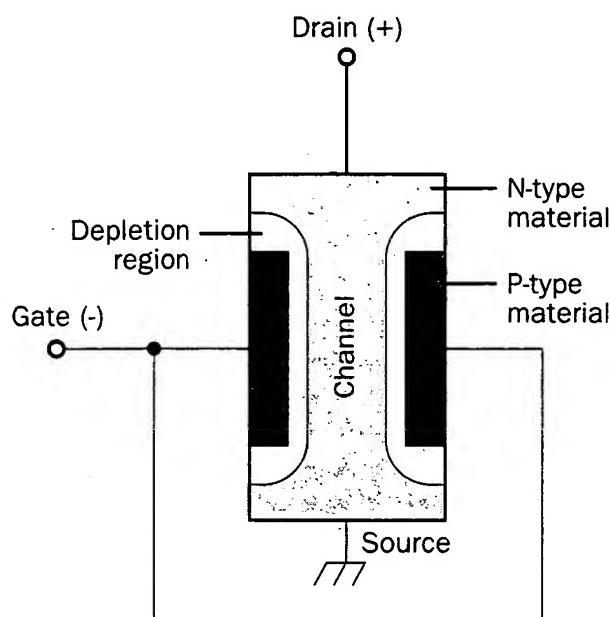
dense wavelength division multiplexing *n.* A data transmission technique in which multiple optical signals, each assigned to a separate color (wavelength frequency), are multiplexed onto a single strand of optical fiber. Because each signal travels separately in its own color band on the fiber, dense wavelength division multiplexing allows for the simultaneous transmission of different types of signals, such as SONET and ATM, each traveling at its own rate of speed. Dense wavelength division multiplexing can greatly increase the carrying capacity of a single optical fiber. Depending on the number, type, and rate of the signals involved, bandwidth can range from more than 40 Gbps to projected highs of 200 Gbps or more. *Acronym:* DWDM. *Also called:* wave division multiplexing, WDM. *Compare* time division multiple access.

dependence *n.* The state in which one entity relies upon specific hardware, software, or specific events for its own definition or functionality. *See also* context-dependent, dependent variable, device dependence, hardware-dependent, software-dependent.

dependent variable *n.* A variable in a program whose value relies on the outcome of another operation.

deployment descriptor *n.* In the Java J2EE network platform, a deployment descriptor is an XML file provided for each module or application describing how it should be deployed. The deployment descriptor directs a deployment tool to deploy a module or application with specific container options. It also describes the specific configuration requirements that an administrator must resolve when installing modules and J2EE applications into an operational environment. *See also* container, J2EE, module, XML.

depth queuing *vb.* 1. In computer graphics and modeling, giving a two-dimensional object a three-dimensional appearance through such techniques as shading and hidden-



FET. An *N*-channel junction field-effect transistor.

fetch *vb.* To retrieve an instruction or an item of data from memory and store it in a register. Fetching is part of the execution cycle of a microprocessor; first an instruction or item of data must be fetched from memory and loaded into a register, after which it can be executed (if it is an instruction) or acted upon (if it is data).

fetch time *n.* See instruction time.

FF *n.* See form feed.

FFT *n.* See fast Fourier transform.

FFT-DCA *n.* See Final-Form-Text DCA.

Fiber Distributed Data Interface *n.* See FDDI.

fiberoptic cable or **fiber-optic cable** *n.* A form of cable used in networks that transmits signals optically, rather than electrically as do coaxial and twisted-pair cable. The light-conducting heart of a fiberoptic cable is a fine glass or plastic fiber called the core. This core is surrounded by a refractive layer called the cladding that effectively traps the light and keeps it bouncing along the central fiber. Outside both the core and the cladding is a final layer of plastic or plastic-like material called the coat, or jacket. Fiberoptic cable can transmit clean signals at speeds as high as 2 Gbps. Because it transmits light, not electricity, it is also immune to eavesdropping.

fiber optics *n.* A technology for the transmission of light beams along optical fibers. A light beam, such as that produced in a laser, can be modulated to carry information.

Because light has a higher frequency on the electromagnetic spectrum than other types of radiation, such as radio waves, a single fiber-optic channel can carry significantly more information than most other means of information transmission. Optical fibers are thin strands of glass or other transparent material, with dozens or hundreds of strands housed in a single cable. Optical fibers are essentially immune to electromagnetic interference. *See also* optical fiber.

fiber to the curb *n.* See FTTC.

fiber to the home *n.* See FTTH.

Fibonacci numbers *n.* In mathematics, an infinite series in which each successive integer is the sum of the two integers that precede it—for example, 1, 1, 2, 3, 5, 8, 13, 21, 34, Fibonacci numbers are named for the thirteenth-century mathematician Leonardo Fibonacci of Pisa. In computing, Fibonacci numbers are used to speed binary searches by repeatedly dividing a set of data into groups in accordance with successively smaller pairs of numbers in the Fibonacci sequence. For example, a data set of 34 items would be divided into one group of 21 and another of 13. If the item being sought is in the group of 13, the group of 21 is discarded, and the group of 13 is divided into groups of 5 and 8; the search would continue until the item was located. The ratio of two successive terms in the Fibonacci sequence converges on the Golden Ratio, a “magic number” that seems to represent the proportions of an ideal rectangle. The number describes many things, from the curve of a nautilus shell to the proportions of playing cards or, intentionally, the Parthenon, in Athens, Greece. *See also* binary search.

fiche *n.* See microfiche.

Fidonet *n.* 1. A protocol for sending e-mail, newsgroup postings, and files over telephone lines. The protocol originated on the Fido BBS, initiated in 1984 by Tom Jennings, and maintaining low costs has been a factor in its subsequent development. Fidonet can exchange e-mail with the Internet. 2. The network of BBSs, private companies, NGOs (nongovernment organizations), and individuals that use the Fidonet protocol.

field *n.* 1. A location in a record in which a particular type of data is stored. For example, EMPLOYEE-RECORD might contain fields to store Last-Name, First-Name, Address, City, State, Zip-Code, Hire-Date, Current-Salary, Title, Department, and so on. Individual fields are characterized by their maximum length and the type of data (for

example, alphabetic, numeric, or financial) that can be placed in them. The facility for creating these specifications usually is contained in the data definition language (DDL). In relational database management systems, fields are called *columns*. 2. A space in an on-screen form where the user can enter a specific item of information.

field-effect transistor *n.* See FET.

field expansion *n.* See date expansion.

Field Programmable Gate Array *n.* See FPGA.

field-programmable logic array *n.* An integrated circuit containing an array of logic circuits in which the connections between the individual circuits, and thus the logic functions of the array, can be programmed after manufacture, typically at the time of installation in the field. Programming can be performed only once, typically by passing high current through fusible links on the chip. *Acronym:* FPLA. *Also called:* PLA, programmable logic array.

field separator *n.* Any character that separates one field of data from another. *See also* delimiter, field (definition 1).

FIFO *n.* See first in, first out.

fifth-generation computer *n.* See computer.

fifth normal form *n.* See normal form (definition 1).

file *n.* A complete, named collection of information, such as a program, a set of data used by a program, or a user-created document. A file is the basic unit of storage that enables a computer to distinguish one set of information from another. A file is the “glue” that binds a conglomeration of instructions, numbers, words, or images into a coherent unit that a user can retrieve, change, delete, save, or send to an output device.

file allocation table *n.* A table or list maintained by some operating systems to manage disk space used for file storage. Files on a disk are stored, as space allows, in fixed-size groups of bytes (characters) rather than from beginning to end as contiguous strings of text or numbers. A single file can thus be scattered in pieces over many separate storage areas. A file allocation table maps available disk storage space so that it can mark flawed segments that should not be used and can find and link the pieces of a file. In MS-DOS, the file allocation table is commonly known as the FAT. *See also* FAT file system.

file attribute *n.* A restrictive label attached to a file that describes and regulates its use—for example, hidden, sys-

tem, read-only, archive, and so forth. In MS-DOS, this information is stored as part of the file’s directory entry.

file backup *n.* *See* backup.

file compression *n.* The process of reducing the size of a file for transmission or storage. *See also* data compression.

file control block *n.* A small block of memory temporarily assigned by a computer’s operating system to hold information about an opened file. A file control block typically contains such information as the file’s identification, its location on a disk, and a pointer that marks the user’s current (or last) position in the file. *Acronym:* FCB.

file conversion *n.* The process of transforming the data in a file from one format to another without altering the data—for example, converting a file from a word processor’s format to its ASCII equivalent. In some cases, information about the data, such as formatting, may be lost. Another, more detailed, type of file conversion involves changing character coding from one standard to another, as in converting EBCDIC characters (which are used primarily with mainframe computers) to ASCII characters. *See also* ASCII, EBCDIC.

file extension *n.* *See* extension (definition 1).

file extent *n.* *See* extent.

file format *n.* The structure of a file that defines the way it is stored and laid out on the screen or in print. The format can be fairly simple and common, as are files stored as “plain” ASCII text, or it can be quite complex and include various types of control instructions and codes used by programs, printers, and other devices. Examples include RTF (Rich Text Format), DCA (Document Content Architecture), PICT, DIF (Data Interchange Format), DXF (Data Exchange File), TIFF (Tagged Image File Format), and EPSF (Encapsulated PostScript Format).

file fragmentation *n.* 1. The breaking apart of files as they are stored by the operating system into small, separate segments on disk. The condition is a natural consequence of enlarging files and saving them on a crowded disk that no longer contains contiguous blocks of free space large enough to hold them. File fragmentation is not an integrity problem, although it can eventually slow read and write access times if the disk is very full and storage is badly fragmented. Software products are available for redistributing (optimizing) file storage to reduce fragmentation. 2. In a database, a situation in which records are not stored in their optimal access sequence because of accumulated additions and deletions of records. Most database